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End Colostomy Using Stapling Device

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Summary

Our experiences concerning the end colostomy using the stapling method are reported. The anvil which has been inserted to the proximal end of the colon and purse string suture with the skin is engaged the anvil shaft, and then, is fired.

This operative procedure is simple, safe and convenient, and we can expect a uniform and satisfactory outcome. We applied this technique on 6 cases and have had no postoperative complications.

Introduction

Since the early 1980's, the stpling technique has been widely applied in the field of alimentary tract surgery[1-3]. Till then, the majority of alimentary tract surgery had been reconstructed by manual anastomosis. This tendency is generally evident in colonic surgery[4], and the stapling device can be used to an end-to-end anastomosis after partial colectomy for colonic cancer, or after anterior resection for rectal cancer, too.

In this paper, our experiences of an end colostomy using EEA stapler (PREMIUM CEEA®, 29 mm) are reported.

Operative technique

The position where the colostomy should be created is marked on the skin in a round shape of about 1.5 cm diameter. The skin is then resected around the shape. The subcutaneous adipose tissue is also removed using a electrocautery. The exposed fascia is crosswise incised, which is followed by underlying muscle splitting and peritoneal incision.

The anal end of the descending (sigmoid) colon is passed through the abdominal wall and is prepared with a purse string suture using the purse string instrument (PSI) to create the end colostomy. The anvil is softly inserted into the lumen of the proximal colon and the purse string suture is gently tied. The position of the colon is maintained by suturing the colon to the fascia and the peritoneum with 3 or 4 interrupted 3–0 silk sutures, respectively.

The round shaped skin edge is prepared with a purse string suture using 1–0 nylon and the anvil

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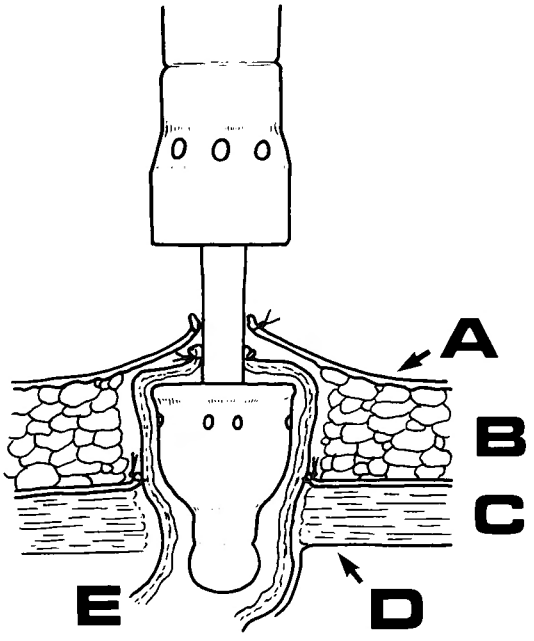

Fig. 1 Schematic representation of end colostomy using the stpling device
A; skin, B; subcutaneous adipose tissue, C; muscle layer and its fascia,
D; peritoneum, E; proximal end of the colon

Table. 1 Patients who have been treated for end colostomy using the stapling device.

Patient No.	Age (yrs)	Sex	Disease	Operation	Colostomy
1	38	M	Rectal ca	elective	permanent
2	44	M	Bowel obst from D ca	emergency	transient
3	80	F	Perforation of S ca	emergency	permanent
4	65	M	Rectal ca	elective	permanent
5	72	M	Bowel obst from D ca	emergency	transient
6	83	M	Rectal ca	elective	permanent

Abbreviations are: ca; cancer, obst; obstruction, D; descending colon, S; sigmoid colon

shaft is introduced through this skin hole. The purse string suture, which has been put around the skin, is tied and the anvil shaft is engaged with the instrument shaft (Fig. 1). The instrument is closed and the staples are fired. Then the instrument is removed.

Clinical results

Six patients were indicated for this colostomy usint the stapling device (Table. 1). All the patients were operated for their colonic malignancy and the informed consent was obtained from these subjects. Three of them underwent emergency operation and in 4 of 6 cases, their colostomy were permanent.

Their postoperative courses were uneventful and no postoperative complications occurred. The staples in the patient 1 and 4 became embedded in the granulation tissue for 1 to 3 months. The

patient 1 died of recurrence 1 year after the operation. The remaining patients are doing well.

Discussion

"Mucosa to mucosa" or "duct to mucosa" has been a fundamental rule in alimentary tract anastomosis[5], however, this concept has taken a new turn, at least, in part, since the stapling device method has developed. Clinical results of anastomosis using the stapling device method certainly became uniform and the frequency of anastomotic leaks has decreased[6,7]. This uniform tendency is similar to that in colonic surgery.

In a teaching hospital, young surgeons must learn to saw before they learn to staple[8], so the acceptance of stapling has been slow. It is true, however, we cannot but recognize some merits of the stapling technique.

With the creation of end colostomy using the stpling device, operating time has been reduced. Also the stapling device technique allows for better completion and simplicity of postoperative care than manual anastomosis. Concerning to economy of time, it took about 10 min to make colostomy by using EEA stapler. It is not necessary to remove the staples in postoperative management of stapled colostomy. The fate of the staples which have been fired is spontaneous removal in part or total in some cases. In other cases, the staples become embedded in the granulation tissue for 1 to 3 months.

If an approximation between the colon and the skin by means of a stapler is too tight, the colonic wall, which is softer than the skin, may be disrupted from the staples resulting the partial or total dehiscence of the colonic wall from the skin. This complication may give rise to stenosis of the colostomy in the near future. If the approximation is too loose, there is a possibility of postoperative bleeding or infection. Thus, engagement of the colon and the skin should not be too tight and not too loose to avoid these detestable sequelae.

It is less than 3 years since we experienced our first case, but we conclude at this point that the creation of end colostomy using the stapling device is an excellent operative procedure.

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和文抄録

自動吻合器を用いた人工肛門造設術

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青木　洋三，植阪　和修，中村　昌文，堂西　宏紀

我々が三年来施行している自動吻合器 (PREMIUM CEEA®, 29 mm) を用いた人工肛門造設術について，手術手技，臨床成績の観点から述べた．

造設部位に直径 1.5 cm の円形の皮膚，皮下脂肪組織の欠損部を造り，近位結腸端を型どおりの方法で腹壁を通しこの欠損部に誘導する．この結腸端に巾着縫合をかけ，アンビルを挿入・固定する．この結腸と腹壁筋膜を4針縫合・固定後，皮膚欠損部の周囲に巾着縫合の糸をかける．アンビルとアンビルシャフトを結合させた後，皮膚の巾着縫合を締め，吻合器のハンドルを締めてファイアーする．

臨床的に6例に応用し，合併症は認めなかった．本術式のポイントは吻合器のハンドルをきつすぎず，緩すぎず締めることで，きつすぎると結腸・皮膚間が離開し，人工肛門の狭窄を，緩すぎると出血，感染を来すであろう．皮膚に残るステイプルは肉芽組織で覆われるものから脱落するものまで様々であるが，放置しておいても何ら問題はない．